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## Geometry of belief

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# Geometry of Belief

A thesis submitted in partial fulfillment of the  
requirements for the award of the degree

**Master of Computer Science by Research**

from

UNIVERSITY OF WOLLONGONG

by

**Shiyan Li**

SCSSE

September 2007

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by

Shiyan Li

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*Dedicated to*  
*Xiaofan Li and Linghua Li*

# Declaration

This is to certify that the work reported in this thesis was done by the author, unless specified otherwise, and that no part of it has been submitted in a thesis to any other university or similar institution.

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Shiyan Li  
May 29, 2008

# Abstract

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Usually, the researchers of traditional belief change theories (e.g., AGM theory) assume that the knowledge of the agents which have the lower priorities should fully accept the knowledge of those higher priority ones in the process of belief revision. These kinds of theories are called prioritized belief change theories. On the contrary, in the discussion of non-prioritized belief change theories (e.g., Konieczny and Pino-Pérez's merging theory), the belief changes happen among the agents which have the same priorities. In this dissertation, we provide a new style of epistemic states and the belief change operations on this kind of epistemic states such that the prioritized or non-prioritized characteristics of belief change operators will be determined only by the properties of agents' knowledge.

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